REMARKS

Claims 1-24 are pending in the application and claims 1-11, 20 and 23 stand rejected.

Rejection under 35 U.S.C §103

Claims 1, 3, 4 and 20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pub. No. 20010055063 to Nagai et al. in view of U.S. Pat. No. 6,850,024 to Peless et al. In particular, with respect to claim 1, the Examiner finds that Nagai disclose all claimed limitations except that they "do not mention expressly: said surface having a position-encoded portion and an obscured portion, wherein the position-encoded portion bears accessible encoded position data and the obscured portion does not bear accessible position data; measuring at least one absolute position of the device with respect to the position-encoded portion of said surface during a portion of said motion when said position-encoded portion of said surface is accessible." The Examiner, however, finds that "Peless et al. disclose a robot that has self-positioning system, including: a surface, on which the robot moves, having a position-encoded portion and an obscured portion (col. 6, lines 30-45), wherein the position-encoded portion bears accessible encoded position data and the obscured portion does not bear accessible position data (col. 6, lines 46-67); measuring at least one absolute position of the device with respect to the position-encoded portion of said surface during a portion of said motion when said position-encoded portion of said surface is accessible (col. 7, lines 12-45)." The Examiner then opines that it would have been obvious to the skilled person "to incorporate the teachings of Peless et al. into the invention of Nagai in order to provide a simple and less-expensive means for precise measurement of the time-varying position of the robot device (Peless et al., col. 7, lines 12-25)." Applicant respectfully disagrees.

Erstwhile, and contrary to the Examiner's assertion, Peless does not disclose a robot that moves along a surface having a position-encoded portion and an obscured portion wherein the position-encoded portion bears accessible encoded position data and the obscured portion does not bear accessible position data. The robot of Peless is a lawn mower that moves over a lawn. The lawn does not bear any accessible encoded position data; all it bears is grass, fallen leaves,

and various deposits from the neighborhood fauna. The way the robot of Peless finds its way about is by a boundary that encloses the area in which the mower is to operate and encircles sub areas within this area that the mower is to keep out of (e.g. flower beds).:

> Looking now at FIG. 1, the working area in which the robot must operate, indicated at "A", is enclosed by a boundary 1. Within the working area there are "islands" in which the robot must not penetrate, which are shadowed and enclosed by boundaries 2 and 3.

(Col. 6, ll. 17-19).

The robot senses the boundary (which is typically a conductive wire) when it is close enough to it to sense the current flowing therethrough.

> According to one particular embodiment of the invention, the boundaries 1, 2 and 3 may comprise a conducting wire. This type of boundary is shown in cross-section in FIG. 2, which shows a wire 4, comprising a metallic core 5 and a plastic outer layer 6. A current "i" is caused to flow through the wire, thus generating a magnetic field along the wire. The intensity of the current may be very low, since it is not necessary that the magnetic field be sensed at a great distance from the boundary, and it is sufficient that it be felt in the close vicinity of the wire.

(col. 6, ll. 29-38, emphasis added).

The robot maps this area A the first time it operates by mapping the outline of the boundary with respect to a starting point S in polar coordinates.

> A coordinates system is defined, as well as a starting point. FIG. 3A shows a lawn mower L relative to the starting point "S" within the lawn, the lawn mower L

being at a point (θ, r) viz at a distance r, which is measured by measuring the movement of the mower, and at an angle θ from starting point S, which is measured by means of a compass. Thus, as shown in FIG. 2B, any point within the enclosed area S will have a unique polar coordinate.

When it is desired to teach the robot the boundaries of its task, the lawn mower is caused first to move around the boundary 1 of FIG. 1. The memory means of the robot memorize the coordinates of the boundary 1, relative to starting point S. Throughout this teaching movement, the boundary sensor positioned on the robot (not shown) senses the boundary 1. Similarly, the boundaries 2 and 3 are sensed for the first time by the robot, and memorized for future use. The robot now has an initial map of the area, similar to what is shown in FIG. 3B, each point having been assigned a coordinate. The set of coordinates so created will be termed "the map" of the working area.

It is thus clear from the plain language of Peless that the surface on which the robot operates does not bear any sort of accessible encoded position data, and all position data resides solely in the robot's memory.

Furthermore, as one can guess by now, because the entire area A is mapped with respect to the boundary, the robot of Peless needs to start at a known location, that is, a point whose absolute location is known:

When it is desired to mow the lawn, the robot is brought to starting point S, and it is started according to a set of instructions which has been pre-

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programmed, and which may be different for each
different task.
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(col. 7, ll. 3-6, emphasis added)

Thus, contrary to the Examiner's assertion, Peless also does not disclose measuring at least one absolute position of the device with respect to the position-encoded portion of said surface during a portion of said motion when said position-encoded portion of said surface is accessible. The robot of Peless always starts at starting point S, the absolute location of which is known *a priori* and upon which the pre-programmed instructions for controlling the robot are based. No absolute position is *measured* by Peless during motion of the robot, rather only distance traveled from the starting point S via an on-board odometer or other such device (please see col. 7, ll. 12-46).

Applicant respectfully reminds the Examiner of the requirements posited by MPEP 2143.03 that "[t]o establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). All words in a claim must be considered in judging the patentability of that claim against the prior art. *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)." (emphasis added) The Examiner has not made, and indeed cannot make, a *prima facie* showing that the asserted combination discloses all claimed limitations.

Additionally, "[t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings." MPEP §2142. The Examiner's proffered reason that the skilled person would be some moved to combine the cited references "in order to provide a simple and less-expensive means for precise measurement of the time-varying position of the robot device" finds no grounding in either reference. Peless requires a boundary enclosing an area – where is this boundary found in Nagai? Where does Peless teach that establishing such a boundary is cheaper than the imaging system of Nagai? Where does Nagai provide motivation for replacing the imaging system of his system, the very heart of his invention, with a completely different system that relies on a boundary outline and *a priori* mapping instead?

"Second, there must be a reasonable expectation of success... The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." MPEP §2142. As mentioned immediately above, these two references take completely different approaches to the problem of navigating a robot that simply cannot be incorporated into a single system, and the Examiner has offered not one single detail as to how exactly the skilled person would go about "incorporating" the teachings of Peless into the system of Nagai. One uses active imaging that actually "sees" what is in front f it; the other one flies "blind" by pre-mapping an area and always starting from the same starting point within the area, keeping track of distance and direction traveled, and sensing the boundary so as not to cross over it. How exactly can these two approaches be successfully combined? Applicant submits that they cannot, and thus the asserted combination is not only not anticipatory of the present claims, but is in fact not even workable.

In light of all of the above, Applicant submits that claim 1 is allowable and respectfully requests the Examiner to reconsider and pass the claim to issue.

Claims 3, 4 and 20 depend from claim 1. "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Therefore, in light of the above discussion of claim 1, Applicant submits that claims 3, 4 and 20 are also allowable at least by virtue of their dependency on claim 1, and therefore are not individually addressed elsewhere herein.

Claim 2 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai in view of U.S. Pat. No. 6,841,963 to Song et al. The Examiner finds that Song discloses a robot device and system including a surface having embedded thereon position encoding indicia, moving the measurement device over the position-encoded surface, and detecting and calculating said absolute position whenever the measurement device passes over said one or more position encoding indicia, at any point of said motion (cols. 7-8, lines 39-11). The Examiner goes on to opine that it would have been obvious to the skilled person to incorporate the teaching of Song into the invention of Nagai (in order to provide a simple and efficient algorithm for calculating the absolute position of the robot." With all due respect, Applicant once again asks, how?

Song is just as different and inapplicable to Nagai as Peless is. The robot of Song uses multiple proximity switches to detect a metal pattern in the floor. How is the skilled person supposed to incorporate the algorithm that calculates position based upon the reading of these proximity switches into the imaging system of Nagai?

Applicant further submits that not only is the motivation to combine proffered by the Examiner not supported by the plain language of the references, it flies squarely against Song which clearly teaches away from the use of imaging systems such as that employed by Nagai:

> Although there have been many studies concerning ways to have the robot cleaner recognize the relational position by memorizing images of circumstances through a camera equipped thereto, due to the considerably burdensome algorithms for image recognition process, and a high possibility of having position recognizing errors generated by changes in the surroundings, the accuracy of the image recognition process has not been enhanced, and commercialization thereof has been deterred.

(col. 1, ll. 26-34)

In view of the above, Applicant submits that claim 2 is also allowable and respectfully requests the Examiner to reconsider and pass this claim to issue as well.

Claims 5-9 and 23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai in view of Peless and further in view of U.S. Pat. No. 6,792,165 to Silverbrook et al. Claims 5-9 and 23 depend from claim 1 and thus, in light of the above discussion of claim 1, Applicant submits that claims 5-9 and 23 are also allowable at least by virtue of their dependency on claim 1, and therefore are not individually addressed elsewhere herein.

Claims 10 and 11 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai in view of Peless and further in view of U.S. Pat. No. 6,741,335 to Kinrot et al. Claims 10 and 11 depend from claim 1 and thus, in light of the above discussion of claim 1, Applicant submits that

claims 10 and 11 are also allowable at least by virtue of their dependency on claim 1, and therefore are not individually addressed elsewhere herein.

Applicant acknowledges with gratitude the Examiner's indication of allowability as to claims 12-19 and the indication of allowability as to claims 21, 22 and 24, but, as detailed above, respectfully insists that all claims are in fact allowable over the art of record in their presently pending form. Applicant also wishes to note that the Examiner may have misread claims 1 and 2 as amended in Applicant's previous submission, because the Examiner appears to indicate that both claims 1 and 2 do in fact contain allowable limitations. Specifically, with respect to claims 12 and 14-19, the Examiner states that these claims are allowable over the prior art due to their "inclusion of the limitation of a second measuring device arranged to determine a time-varying vector representing the relative movement of the device with respect to the surface, wherein the first measuring device is further arranged to determine said at least one absolute position of the device at any time while said second measuring device is determining said time-varying vector." Thus, Applicant understands the Examiner to state that it is the *simultaneous* determination of an absolute position and time-varying vector.

Claim 1 recites, *inter alia*, measuring a time-varying vector during motion of the device and measuring at least one absolute position during a portion of said motion. Thus, both the time-varying vector and the absolute position are measured during said motion. Similarly, claim 2 recites calculating at least one absolute position by detecting one or more position encoding indicia at any point of said motion and in conjunction with the aforementioned detection calculating a time-varying motion vector. Applicant thus respectfully submits for the Examiner's consideration that, in addition to the many reasons advanced previously, claims 1 and 2 are allowable by virtue of their inclusion of limitations already found patentable by the Examiner.

In view of the above, Applicant thus submits that the application is in condition for allowance and respectfully urges the Examiner to pass this case to issue.

Regarding the prior art made of record by the Examiner but not relied upon, Applicant believes that this art does not render the pending claims unpatentable.

The Commissioner is authorized to charge any additional fees which may be required or credit overpayment to deposit account no. 08-2025. In particular, if this response is not timely filed, the Commissioner is authorized to treat this response as including a petition to extend the time period pursuant to 37 CFR 1.136(a) requesting an extension of time of the number of months necessary to make this response timely filed and the petition fee due in connection therewith may be charged to deposit account no. 08-2025.

I hereby certify that this correspondence is being deposited with the United States Post Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on

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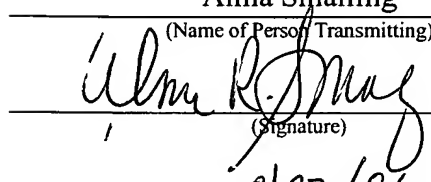
(Name of Person Transmitting)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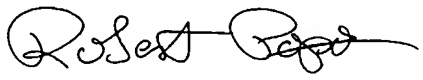
Respectfully submitted,



Robert Popa
Attorney for Applicants
Reg. No. 43,010
LADAS & PARRY
5670 Wilshire Boulevard, Suite 2100
Los Angeles, California 90036
(323) 934-2300 voice
(323) 934-0202 facsimile
rpopa@ladasparry.com